Why does the iphone terminal prompt "The wireless LAN does not seem to be connected to the Internet"?

Wireless 龚训杰 2020-12-11 Published

Network Topology

NULL

Problem Description

Many sites encountered the pop-up "Wireless LAN does not appear to be connected to the Internet" during the use of the iphone terminal. At this time, the wifi icon remains. After clicking "Continue to try to use the wireless LAN" at the bottom of the pop-up window, the wireless network can be used normally. And the phenomenon happens occasionally, the more the new iPhone, the more common the phenomenon.

Process Analysis

In response to this problem, tracking multiple problem terminals found that almost all of these terminals are abnormal pop-up windows after IOS 13.X version. For this reason, the laboratory has set up an environment for analysis and testing.

The test terminals are the new IOS 14 Apple terminal, IOS 12 Apple terminal, and an old Apple terminal upgraded from IOS 12 version to IOS 13.6. Next, the test was carried out, and the test found that except for the IOS 12 terminal, there was no abnormal pop-up window, the other two models appeared, but the probability is extremely low.

When the pop-up window appears, check the terminal status on the device, the ping test is normal, and the sending of WeChat messages can be received in the pop-up state, indicating that it has nothing to do with wireless devices, authentication methods, wireless networks, and compatibility with Apple phones.

Through the comparison of captured packets, it is found that when the pop-up window prompts, the terminal after the IOS 13 version is detecting the message of the Apple server netcts.cdn-apple.com, but the terminal of IOS 12 has not sent this message detection from beginning to end:

```
Frame 114909: 146 bytes on wire (1168 bits), 146 bytes captured (1168 bits)
Ethernet II, Src: d4:61:fe:9c:f6:e0 (d4:61:fe:9c:f6:e0), Dst: ac:74:09:67:92:18 (ac:74:09:67:92:18)
Internet Protocol Version 4, Src: 172.32.3.1 (172.32.3.1), Dst: 172.32.3.254 (172.32.3.254)
User Datagram Protocol, Src Port: 43022 (43022), Dst Port: capwap-data (5247)
Control And Provisioning of Wireless Access Points
Ethernet II (VLAN tagged), Src: 90:b0:ed:98:e9:77 (90:b0:ed:98:e9:77), Dst: 04:d7:a5:11:f4:48 (04:d7:a5:11:f4:
Internet Protocol Version 4, Src: 172.31.3.4 (172.31.3.4), Dst: 114.114.114.114 (114.114.114.114)
User Datagram Protocol, Src Port: 50412 (50412), Dst Port: domain (53)
Domain Name System (query)
  [Response In: 115619]
  Transaction ID: 0xef19
⊞ Flags: 0x0100 (Standard query)
  Questions: 1
  Answer RRs: 0
  Authority RRs: 0
  Additional RRs: 0
⊟ Queries
  ⊟ www.netcts.cdn-apple.com: type A, class IN
      Name: www.netcts.cdn-apple.com
      Type: A (Host address)
      Class: IN (0x0001)
```

```
Frame 114909: 146 bytes on wire (1168 bits), 146 bytes captured (1168 bits)
Ethernet II, Src: d4:61:fe:9c:f6:e0 (d4:61:fe:9c:f6:e0), Dst: ac:74:09:67:92:18 (ac:74:09:67:92:18)
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User Datagram Protocol, Src Port: 43022 (43022), Dst Port: capwap-data (5247)
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  Questions: 1
  Answer RRs: 0
  Authority RRs: 0
  Additional RRs: 0
⊟ Queries
  ⊟ www.netcts.cdn-apple.com: type A, class IN
      Name: www.netcts.cdn-apple.com
      Type: A (Host address)
      Class: IN (0x0001)
```
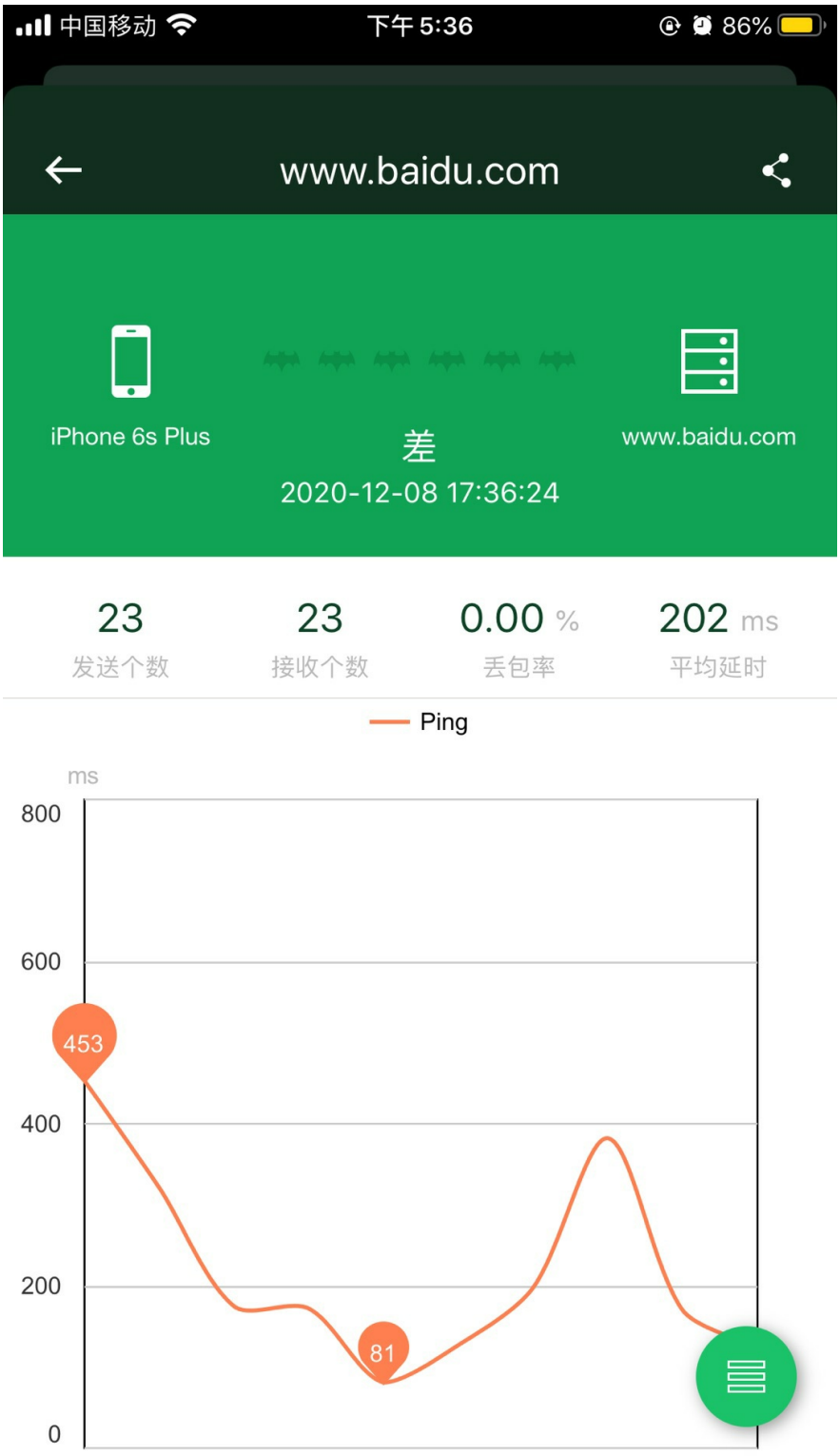
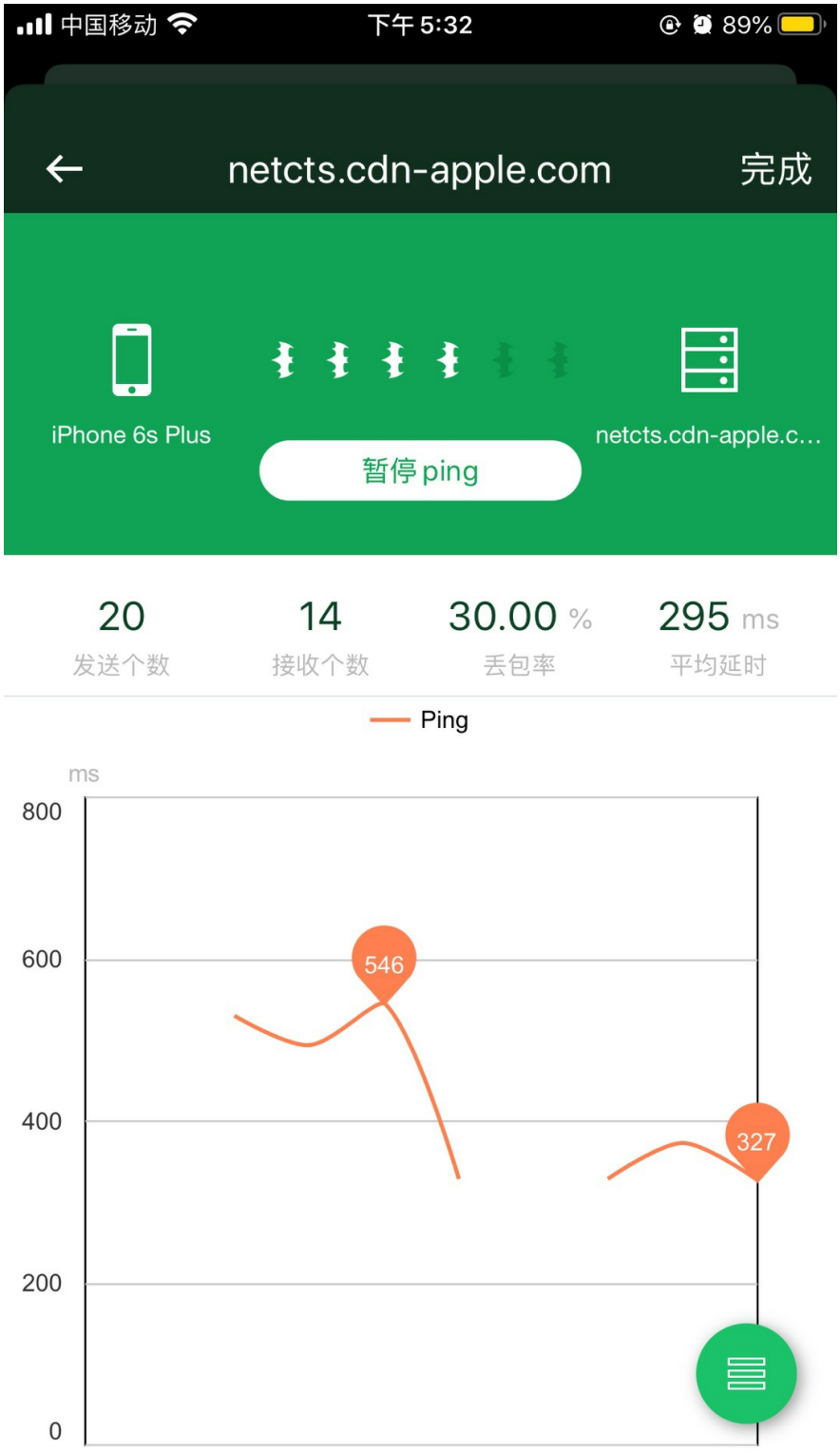
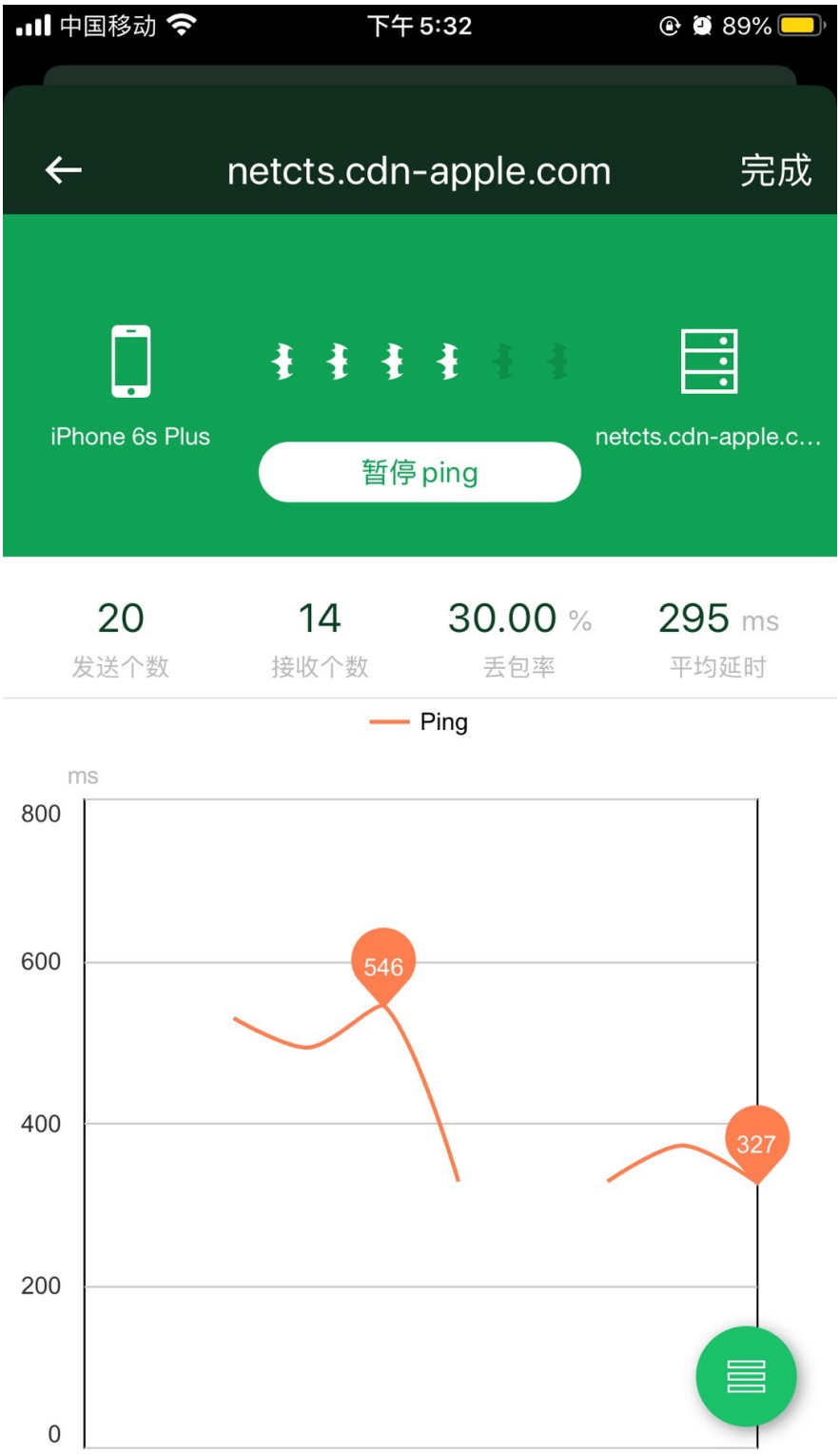

Later, I confirmed with Apple that netcts.cdn-apple.com is a new domain name after upgrading iOS 13.x. Then the next step is to test the domain name. First, use the terminal to ping Baidu to test, and no packet loss occurs:

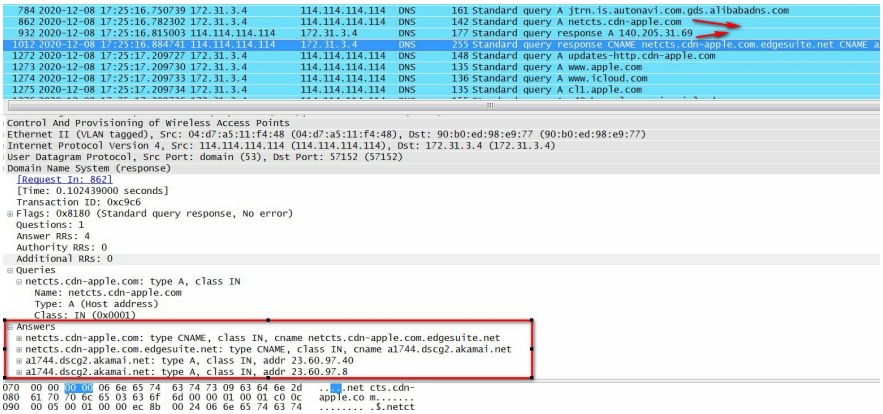


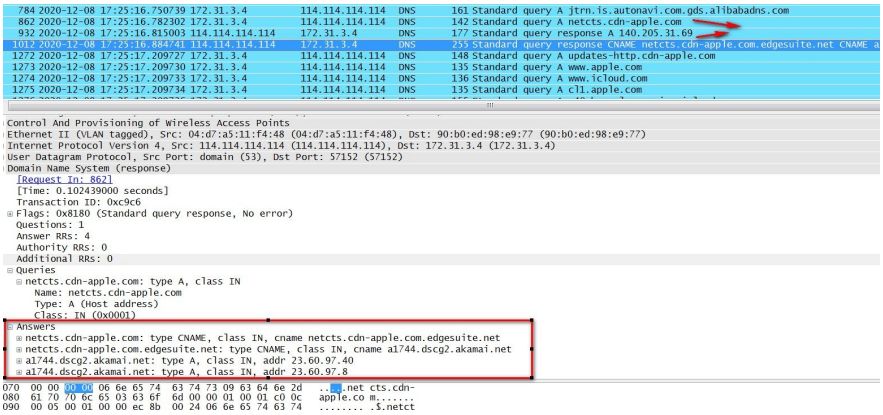
Next, Ping "netcts.cdn-apple.com" found serious packet loss:


中国移动
下午 5:32
89%
netcts.cdn-apple.com
完成
iPhone 6s Plus
netcts.cdn-apple.c...
暂停 ping
20
发送个数
14
接收个数
30.00 %
丢包率
295 ms
平均延时
Ping
ms
800
600
400
200
0
546
327



While checking the packet capture process, when there is no pop-up window, the detection of the do main name can get a normal response, but when the abnormal pop-up window appears, the detection abnormality is found, and then the terminal tries to detect multiple times without success. In the end, the mobile phone thinks that the network is abnormally popped up.





Solution

The reason for the failure is that iPhone has added a new network detection mechanism in iOS 13.x: netcts.cdn-apple.com.

When the server does not answer due to unstable network or other reasons, the iPhone mistakenly b elieves that the Wi-Fi network is abnormal, and a pop-up window reminds the user. Since the Apple manufacturer has not clearly resolved the unstable interaction with this server, the abnormal pop-up window appears, and you can only manually click to continue to use to restore the normal experience.